

ASCOMYCETES FROM SOUTH INDIA—III *

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(Communicated by Prof. T. S. Sadasivan, F.A.Sc.)

7. *Anthostomella hibisci* sp. nov. (Figs. 1-3)

Perithecia caulicole, immersed except for the clypeus which is visible as a circular, raised, umbonate, black structure on the surface of the twig; perithecia broadly globose with a short beak; wall thin, made up of dark brown, pseudoparenchymatous cells, membranous; asci broadly clavate, unitunicate, $104-130 \times 18-22 \mu$; mixed with narrow, filamentous paraphyses; ascospores 8, irregularly distichous, 1-celled, 4-guttulate, guttules clearly visible when young, faintly visible when old; spores almond-shaped, pale brown when young, dark brown with age, excepting for the 2, hyaline, bluntly pointed ends which appear as short appendages, $26-30 \times 11-14 \mu$.

Perithecia caulicola, immersa præter clypeum qui apparet ut structura circularis, elevata, umbonata, nigra super superficiem ramulorum; perithecia late globosa, rostro brevi ornata; parietes tenuis, constantes cellulis, fusce brunneis, pseudoparenchymaticis, membranaceis; asci late clavati, semel tunicati, $104-130 \times 18-22 \mu$, intermixi cum paraphysibus angustis, filamentosis; ascosporeæ 8, irregulariter distichæ, semel cellulatæ, 4-guttulatæ, guttulis patentibus clare in juvenili statu, obscuris ad maturitatem; sporæ amygdaloidæ, pallide brunneæ in juvenili statu, fusce brunneæ ad maturitatem, excepto duplici apice hyalino, hebetæ, qui apparet ut duplex appendix, $26-30 \times 11-14 \mu$.

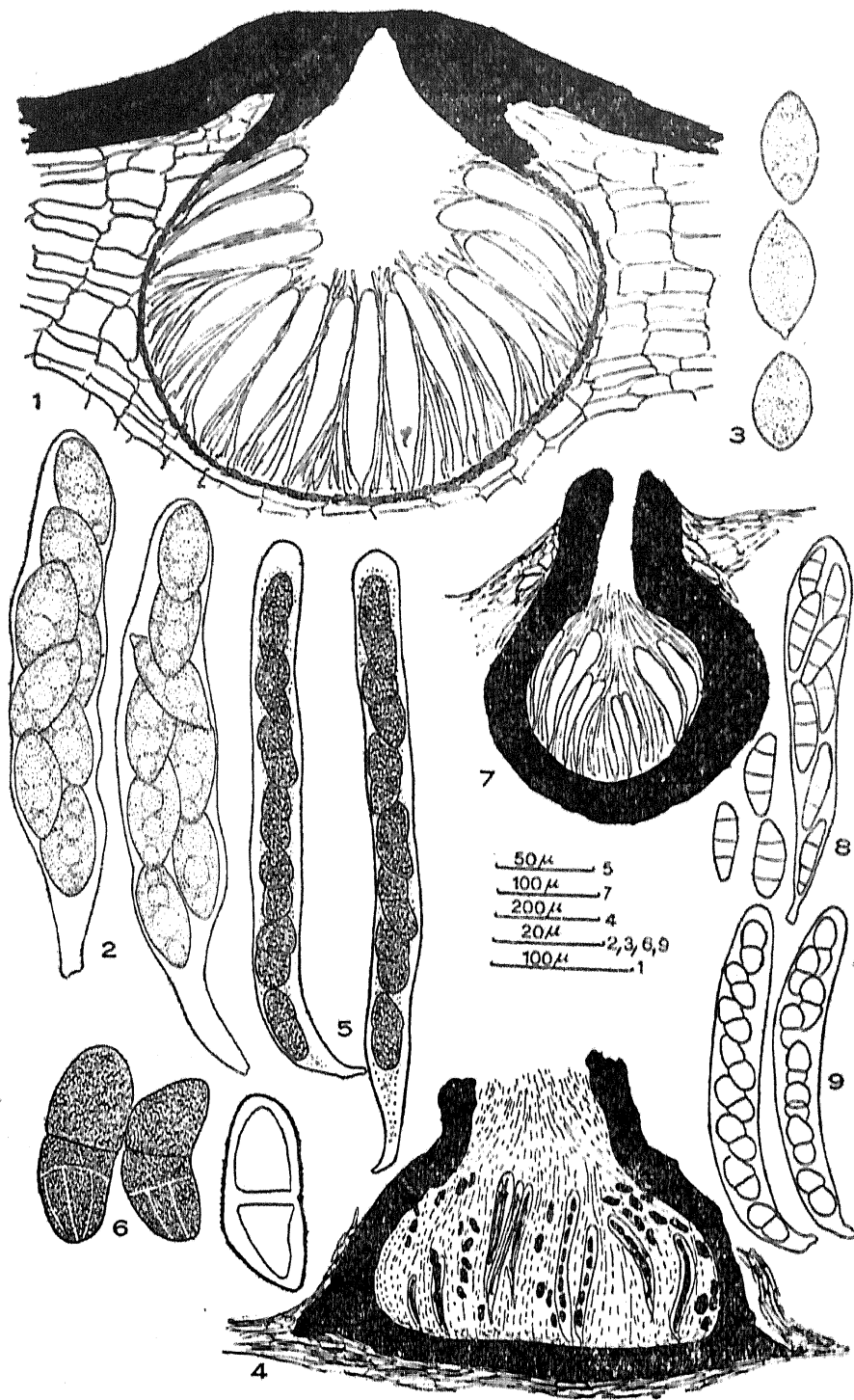
Typus lectus est culmis emortuis *Hibisci rosæ-sinensis* Linn., ad Shri Bagh, in loco Ernakulam, in statu T.C. die 7 septembris, anni 1951, a C. V. Subramanian, et positus in Herbario M.U.B.L. sub numero 490.

This species shows some resemblance to *Anthostomella africana* (K. and C.) Sacc. (Saccardo, 1882) especially in the measurements of the ascospores. However, in *A. africana* there is no mention of the short, hyaline appendages of the ascospores. The present fungus is, therefore, assigned to a new species.

8. *Amphisphæria lantanæ* sp. nov. (Figs. 4-6)

Perithecia caulicole, immersed at first, half erumpent finally, single or in groups of 4-5, conoid in longitudinal section; ostiole distinct, papillate,

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FIGS. 1-9. Figs. 1-3. *Anthostomella hibisci*, perithecium (diagrammatic), asci and ascospores. Figs. 4-6. *Amphispheeria lantanae*, perithecium (diagrammatic), asci and ascospores. Figs. 7-8. *Ceratosphaeria crossandrae*, perithecium (diagrammatic), asci and ascospores. Fig. 9. *Didymosphaeria bambusicola*, asci.

wall of perithecium carbonous, black; asci cylindrical, produced from the base of the perithecium, unitunicate, $200-250 \times 19-25 \mu$; ascospores 8, monostichous, 2-celled, slightly constricted at the septum, ends of cells rounded; epispore dark brown, highly verrucose, except for one transverse smooth, clear, hyaline line just below the middle of the lower cell, and 4-6 clear, smooth, hyaline longitudinal lines running from the middle of the lower cell to its end, $37-44 \times 15-19 \mu$; paraphyses abundant, unbranched, as long or longer than the asci.

Perithecia caulicola, primo immersa, tandem suberumpentia, singula vel acervata in catervas constantes e 4-5 individuis, conoidea in sectione longitudinali; ostiolum distincte clarum, papillatum; perithecii parietes carbonacei, nigri; asci cylindrici, producti e basi perithecii, semel tunicati, $200-250 \times 19-25 \mu$; ascosporæ 8, monostichæ, bicellulatæ, tenuiter constrictæ ad septum medium, apicibus rotundatis; episporium fusce brunneum alte verrucosum præter lineam transversam hyalinam immediate sub medio cellulæ inferioris et præter 4-6 lineas longitudinales hyalinas claras decurrentes e medio ad apicem cellulæ inferioris; $37-44 \times 15-19 \mu$; paraphyses abundantes, haud ramosæ, æque longæ ac asci, vel hisce longiores.

Typus lectus in ramulis emortuis *Lantane camerae* L. var. *aculeatae* Mold. in campo laboratorii botanici universitatis, in urbe Madras, die 6 novembris, anni 1951, a C. V. Subramanian, et positus in Herbario M.U.B.L. sub numero 616.

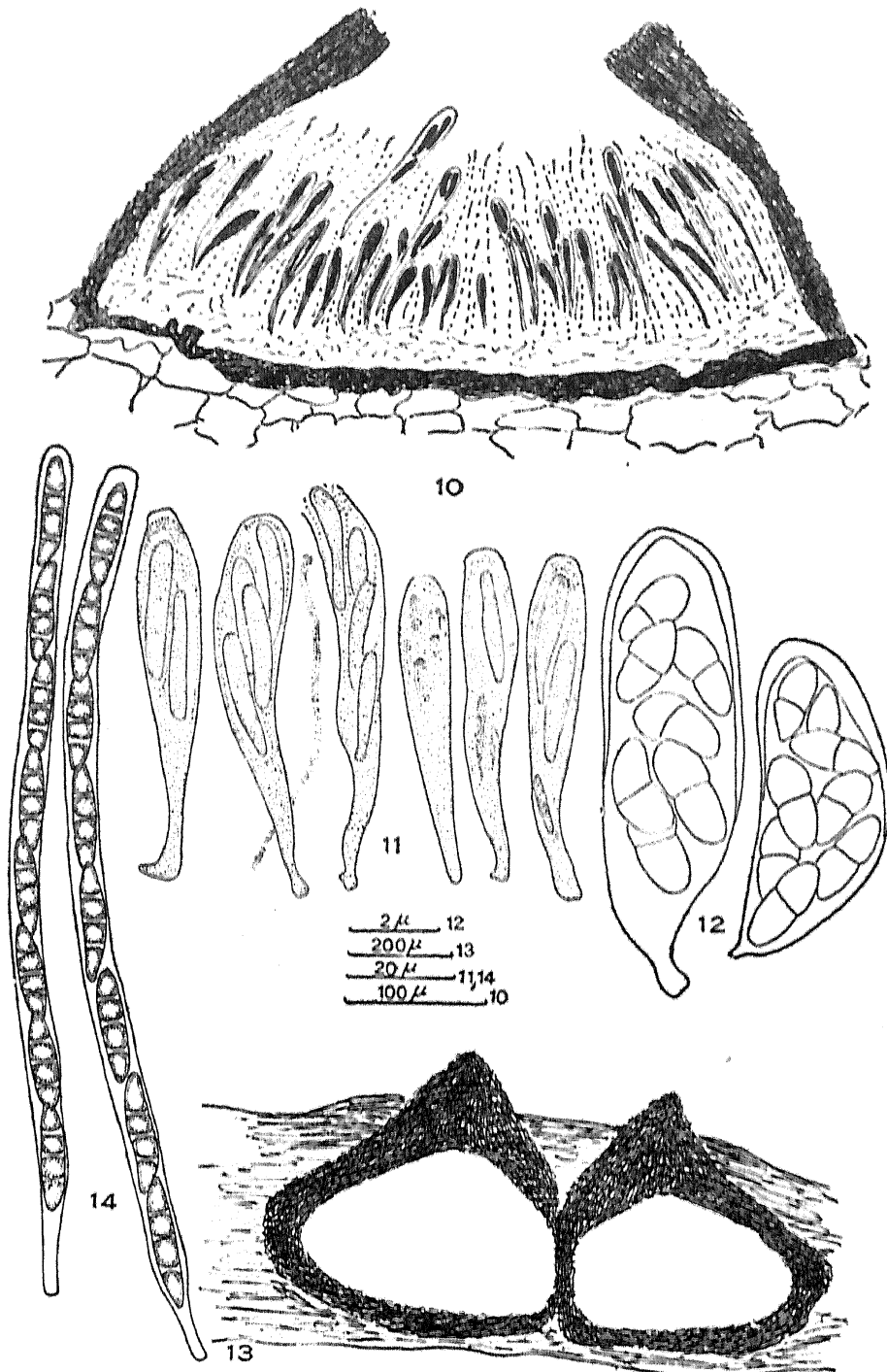
Amphisphæria Ces. & de Not. is a very large genus and a large number of species have been described, mostly on dead twigs of various plants. However, in none of the species so far described is the epispore verrucose. In *A. pulcherrima* Speg. (Saccardo, 1882) both the cells of the ascospore are stated to be striate, but the asci are very much smaller than in the present fungus.

9. *Ceratosphæria crossandrae* sp. nov. (Figs. 7-8)

Perithecia caulicole, immersed, with the tip of the rostrum erumpent through the bark, about 200μ in diameter; rostrum shorter than the perithecial diameter; asci arising from the base of the perithecium, clavate with a narrow foot and slightly thickened apical wall, $64-80 \times 8-13 \mu$; ascospores 8, hyaline, 3-septate, navicular in shape, $16-19 \times 6.4 \mu$; paraphyses numerous filamentous, as long as the asci.

Perithecia caulicola, immersa, apice rostri erumpente per corticem ca. 200μ diameter; rostrum brevius perithecii diametro; asci e basi perithecii surgentes, clavati, pediculo angusto, parietibus apicalibus crassioribus, $64-80 \times 8-13 \mu$; ascosporæ 8, irregulariter distichæ, hyalinæ, triseptatæ,

naviculares forma, $16-19 \times 6.4 \mu$; paraphyses plurimæ, filiformes, æque longæ ac asci.



FIGS. 10-14. Figs. 10-11. *Hypodermella rhamni*, hysterothecium (diagrammatic), and asci. Fig. 12. *Melanopsamma indica*, asci. Figs. 13-14. *Metasphaeria raimundoi*, perithecia (diagrammatic) and asci.

Typus lectus in ramulis emortuis *Crossandra undulæfoliæ* Salisb., in campo laboratorii botanici universitatis in urbe Madras, die 13 augusti anni 1951, a C. V. Subramanian et K. Ramakrishnan, et positus in herbario M.U.B.L. sub numero 288.

About 25 species of *Ceratosphæria* have been described so far, but none on *Crossandra* or any other member of the Acanthaceæ. The present fungus shows some resemblance to *Ceratosphæria rhenana* (Averswald) Winter (Winter, 1887) in ascospore measurements and in general characteristics of the perithecia. However, the present fungus has much smaller asci and perithecia than in *C. rhenana*.

10. *Didymosphæria bambusicola* v. Höhn. in *Ergeb. Bot. Exped. Sudbras.*, 1901 in *Denk. K. Ak. d. Wiss.*, 83, 25, 1907; Saccardo, *Syll. Fung.*, 22, 175, 1913 (Fig. 9)

Perithecia minute, black, immersed at first, slightly erumpent finally, asci cylindrical-clavate, with a short foot, $80-87 \times 9.6 \mu$; ascospores 8, monostichous, dark brown, 2-celled, $11-12.8 \times 4.8 \mu$; paraphyses filiform, septate, longer than the asci.

On dead ligules of ? *Bambusa* sp., Agri-Horticultural Society's Gardens, Madras, 25 February 1951, coll. K. Ramakrishnan and C. V. Subramanian, Herb. M.U.B.L. No. 102.

The fungus agrees in all essential respects with *D. bambusicola*. However, the asci are slightly longer in the present fungus. *D. bambusicola* was first reported from Brazil. It is reported for the first time from India.

11. *Hypodermella rhamni* sp. nov. (Figs. 10-11)

Hysterothecia foliicolous, hypophyllous, scattered on necrotic spots with reddish margins, minute, black, elongate-oval, each opening by a longitudinal cleft; wall membranous, made of dark brown, pseudoparenchymatous cells; asci broadly clavate, truncate and with a slightly thickened wall at the apex and a short foot at the base, 1-4 spored, mostly 2-spored, $174-230 \times 26-37 \mu$; ascospores 1-celled, hyaline, elongate-club shaped, surrounded by a halo-like area while inside the ascus, the halo probably representing a mucilagenous covering; $56-81 \times 11-15 \mu$; paraphyses present, unbranched, filamentous, with slightly swollen tips, usually longer than the asci, but not forming an epithecium.

Hysterothecia foliicola, hypophylla, dispersa in maculas necroticas marginibus rubescentibus ornatas, minuta, nigra, elongato-ovalia, patentia

per fissuram longitudinalem; parietes membranacei, constantes e cellulis fusce brunneis, pseudoparenchymaticis; asci late clavati, truncati, parietibus apicalibus paulo crassioribus atque pediculo brevi ad basim ornati ut plurimum 2-spori (1-4 spori), $174-230 \times 26-37 \mu$; ascospore unicellulatae, hyalinae, elongato-clavatae, circumdatae area nimbo simili in asco, nimbo probabiliter stante pro operculo mucilaginoso; $56-81 \times 11-15 \mu$; paraphyses adsunt, haud ramosae, filiformes, apicibus tenuiter tumescentibus, ut plurimum ascis longiores sed epithecium minime efformantes.

Typus lectus in foliis viventibus *Rhamni* cuiusdam specei, ad Pillar Rocks, in collibus Kodaikanal (altitude 7,000 feet) in Madurai District, Statu Madras, die 12 decembris anni 1953 a K. Ramakrishnan et positus in herbario M.U.B.L. sub numero 1060.

Most of the species of this genus are parasitic on the needles of conifers except *H. symploci* Petch (Petch, 1919) and *H. richeae* Petr. (Petraik, 1954), which are on the leaves of *Symplocos* sp. and *Richea continentis* respectively. The present fungus has exceptionally large asci and ascospores when compared with these two species. An interesting feature of the present fungus is the presence of abortive ascospores in many of the asci (Fig. 11). In most of the asci the number of ascospores is 2, but in some the number is reduced to one. In some asci all the ascospores have aborted, and their remnants can be seen clearly. In some cases the ascospores instead of completely disintegrating are much reduced in size. Many asci, however, have the full complement of 4 ascospores characteristic of the genus.

12. *Melanopsamma indica* sp. nov. (Fig. 12)

Perithecia caulicole, superficial, black, somewhat depressed-globose; wall thick, membranaceous, made up of dark brown, pseudoparenchymatous somewhat thick-walled cells; asci few in a perithecium, large, broadly clavate, rounded at the apex, and narrowed into a foot at the base, bitunicate with a thick inner wall and a thin outer wall, $93-126 \times 33-44 \mu$; ascospores 8, 2-celled, hyaline, irregularly distichous, slightly constricted at the septum, $27-34 \times 11-18 \mu$.

Perithecia caulicola, superficialia, nigra, non nihil depresso-globosa, parietibus crassis, membranacea, constantia e cellulis fusce brunneis, pseudoparenchymaticis, crasseque parietatis; asci pauci in perithecio, ampli, late clavati, rotundati ad apicem, ad basim fastigiati in pediculum quemdam, bitunicati, parietibus interioribus crassis, exterioribus vero tenuibus, $93-126 \times 33-44 \mu$; ascospore 8, bicellulatae, hyalinae, irregulariter distichae tenuiter constrictae ad septum, $27-34 \times 11-18 \mu$.

Typus lectus in ramulis emortuis quibusdam, in collibus Tirumalai dictis, in Chittoor Dist. Statu Andhra, die augusti 22 anni 1951, a K. Ramakrishnan, et positus in herbario M.U.B.L. sub numero 445.

About a 100 species of this genus have been so far described. However, the measurements of the asci and ascospores of the present fungus do not agree with those of any of the known species.

13. *Metasphaeria raimundoi* Rehm., in Ascomycet. Philip. IV, *Leaflets of Philip. Botany*, VI, 1919, 1913; Saccardo, *Syll. Fung.*, 1928, 24: 954 (Figs. 13–14)

Perithecia immersed, erumpent only by the tip, ostiolate, conoid, up to 600μ in diameter; asci long, cylindrical, with a narrow foot, $148\text{--}178 \times 7\text{--}4\mu$; ascospores 8, monostichous, hyaline, 4-celled, at first 2-celled, with one large central vacuole in each cell, $22\text{--}26 \times 5\mu$; paraphyses abundant, filamentous.

On dead twigs of *Crossandra undulæfolia* Salisb., Madras University Botany Laboratory Garden, August 31, 1951, coll. C. V. Subramanian, Herb. M.U.B.L. No. 433.

M. raimundoi was first described from the Philippines on *Leucæna glauca*. The present fungus agrees closely with this species except for the slightly longer asci and the larger perithecia. This is the first record of this fungus for India.

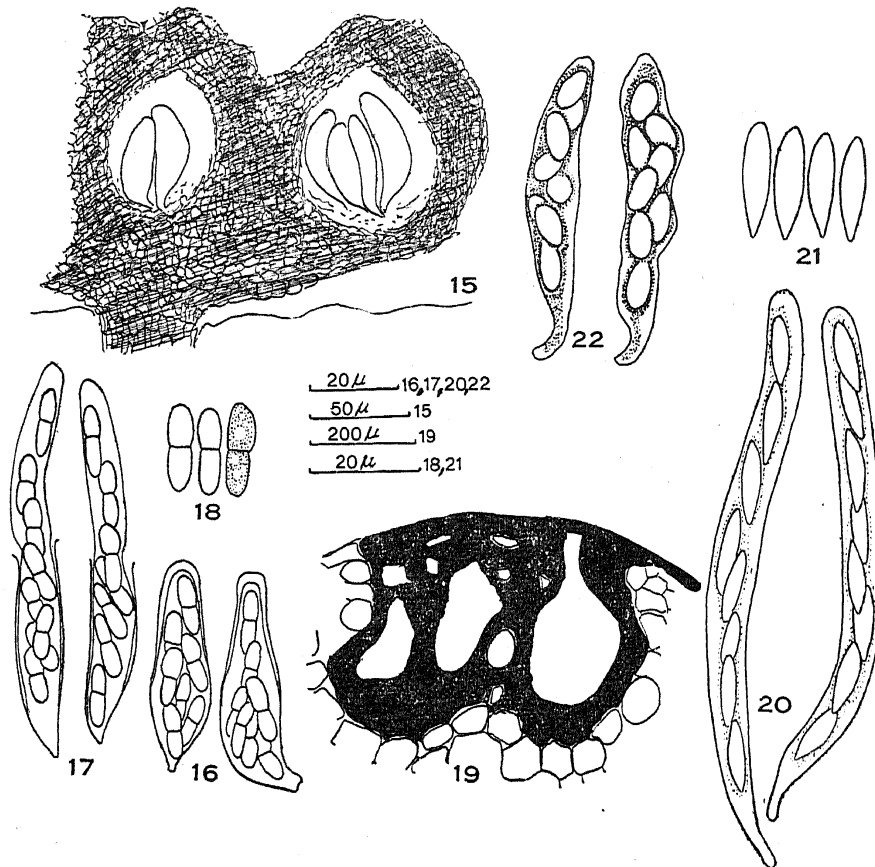
14. *Microcyclus phæbes* sp. nov. (Figs. 15–18)

Follicole, stromata amphigenous, mostly hypophyllous, scattered, black $0\text{--}0\text{--}0\text{--}0\text{--}5$ mm. in diameter, entirely superficial except for the centrally situated foot which penetrates the leaf tissue; stroma made up of brown, pseudo-parenchymatous, somewhat thick-walled cells; loculi many in a stroma, globose to elliptical, $90\text{--}120 \times 60\text{--}80\mu$, no clear ostiole visible; asci few in a loculus, clavate to fusiform, $56\text{--}67 \times 13\text{--}16\mu$, bitunicate, with a thin outer wall and a thick inner wall, apex of the ascus truncate; interthecial threads present separating the asci; ascospores hyaline, 2-celled, cells unequal, upper cell being broader and shorter, $18\text{--}21 \times 5\text{--}6\text{--}4\mu$.

Follicolus; stromata amphigena, ut plurimum epiphylla, dispersa, nigra, $0\text{--}0\text{--}0\text{--}0\text{--}5$ mm. diameter, penitus superficialia præter pediculum centralem, qui textus plantae hispitis penetrat, constantia e cellulis brunneis, pseudo-parenchymaticis, pariete non nihil crasso ornatis; loculi plures in stromate, globosi vel elliptici, $90\text{--}120 \times 60\text{--}80\mu$, ostiolo haud patente; asci pauci in singulis loculis, clavati vel fusiformes, $56\text{--}67 \times 13\text{--}16\mu$, bitunicati, parietibus

exterioribus tenuibus, interioribus vero crassis, apice, tunicato, filamentis interthecialibus ascos separantibus; ascosporæ hyalinæ, distichæ, bicellulatæ, cellulis inequalibus, cellula superiore latiore atque brevior, $18-21 \times 5-6.4 \mu$.

Typus lectus in foliis abscissis atque luteolis *Phæbes paniculatæ* Nees, in loco Mercara, in Statu Coorg, die 12 octobris anni 1953 a C. V. Subramanian et positus in herbario M.U.B.L. sub numero 954.



Figs. 18-22

Figs. 15-18. *Microcyclus phæbes*: Fig. 15, stromata and loculi (diagrammatic); Fig. 16, asci; Fig. 17, dehisced asci; Fig. 18, ascospores. Figs. 19-21. *Phyllachora cyperi*, stroma, loculi (diagrammatic), asci and ascospores. Fig. 22. *Phyllachora minuta*, asci.

Four species of this genus are known according to a recent monograph (Muller and Sanwal, 1954); but none on *Phæbe* or any other member of the Lauraceæ. The ascus dehisces by the breaking of the outer thin wall and the elongation of the inner thicker wall (Fig. 17).

15. *Phyllachora cyperi* Rehm in Thumen, Contr. myc. Lus. n. 282; Saccardo, *Syll. Fung.*, 1883, 2, 606 (Figs. 19-21)

Stromata caulicole, black, shining, linear, clypeus present; locules 1-3 in a stroma; asci cylindrical with a narrow foot, $133-162 \times 11-15 \mu$;

ascospores 8, monostichous, 1-celled, hyaline, fusiform or short clavate, with bluntly pointed ends, $12-27 \times 5-6.4 \mu$; paraphyses present, filamentous, hyaline, as long as the asci.

On living culms of *Fimbristylis* sp., Marina, Madras, 14 February 1951. coll. C. V. Subramanian and K. Ramakrishnan, Herb. M.U.B.L. No. 56 and No. 1116, July 22, 1954, coll. K. Ramakrishnan.

This fungus was first reported from Spain. This is the first record of this fungus for India. The host is new.

16. *Phyllachora minuta* P. Henn., in *Fungi Javanici novi*, *Hedwigia*, 1902, p. 143; Saccardo, *Syll. Fung.*, 1905, 17, 832 (Fig. 22)

Spots amphigenous, circular to irregular; stromata amphigenous, minute, pulvinate, black, shining, 0.5–1 mm. diameter; asci clavate with an obtuse apex and narrow base; $85-119 \times 10-17 \mu$; ascospores sub-distichous, 1-celled, hyaline ellipsoid to ovoid, $16-20 \times 8-9.6 \mu$; paraphyses filamentous.

On living leaves of *Hibiscus tiliaceous* Linn., Pullepady, Ernakulam, T.C. State, May 6, 1953, coll. C. V. Subramanian, Herb. M.U.B.L. No. 940.

The present fungus agree very closely with *P. minuta* P. Henn., first described on *Hibiscus* sp., from Buitenzorg, Indonesia. The asci and ascospores are slightly larger in the present collection. This is the first record of the fungus for India.

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